

Claim 30 (new):

An apparatus according to claim 29 in which movement of the feed material through the arrangement for imparting a swirling motion to the feed material imparts a spiralling motion to the feed material passing through the swirl generator.

Claim 31 (new):

An apparatus according to claim 30 in which the arrangement for imparting a swirling motion is a single conduit or two or more conduits or passageways located within the swirl generator.

Claim 32 (new):

An apparatus according to claim 29 in which the swirl generator is a tangential flow swirl generator in that the inlet of the swirl generator is substantially arranged in an axial direction of the apparatus for receiving tangential flow from the inlet of the apparatus and the outlet is arranged to discharge the components in a axially swirling motion.

Claim 33 (new):

An apparatus according to claim 29 in which the evaporator is formed from a single evaporation tube.

Claim 34 (new):

An apparatus according to claim 29 in which the evaporator is formed from a plurality of evaporation tubes wherein each evaporation tube is provided with a swirl generator such that the components of the feed material are introduced into each evaporation tube in a swirling motion produced as a result of passing the feed material through the swirl generator.

Claim 35 (new):

An apparatus according to claim 34 in which the plurality of evaporation tubes have a variety of different diameters.

Claim 36 (new):

An apparatus according to claim 29 in which the swirl generator is provided with a reject nozzle for allowing vapour to pass through the swirl generator when introducing a swirling movement to the feed material for discharge from the apparatus.

Claim 37 (new):

An apparatus according to claim 36 in which the reject nozzle is located in the lower surface of the swirl generator.

Claim 38 (new):

An apparatus according to claim 36 in which the reject nozzle is in fluid communication with a reject conduit extending internally through the body of the swirl generator to allow vapor to pass through the swirl generator for discharge from the apparatus.

Claim 39 (new):

An apparatus according to claim 29 in which there is a further flow path intermediate the central core flow path and the outer radial flow path formed in the evaporation tube or tubes of the evaporator.

Claim 40 (new):

An apparatus according to claim 29 in which the evaporator tube or tubes forming the evaporator are provided with parallel sides, stepped sides or tapering sides.

Claim 41 (new):

An apparatus according to claim 29 in which the evaporation tube or tubes are arranged to extend substantially vertical within the evaporator portion.

Claim 42 (new):

A method of separating one component from another component of a feed material using a cyclone evaporation apparatus having a swirl generator portion and an evaporator portion, including admitting the feed material containing the two components to be separated from one another to the swirl generator portion forming one part of the evaporation apparatus to impart a swirling motion to the feed material for at least partially separating the components from each other and to enhance the vaporisation of at least one of the components, passing the feed material through the swirl generator, vaporising at least part of the one component in the evaporator portion, separating the one component from the other component by the one component having a tendency to remain as a vapour in the apparatus whereas the other component has a tendency or propensity to be condensable to a liquid in the apparatus, and discharging the one and the other components from the apparatus in at least partially separated streams whereby separation of the two components is substantially maintained, wherein one of the components of the feed material undergoes at least partial flash vaporisation on emerging from an outlet of the swirl generator and there is a central core flow path and an outer radial flow path within the evaporator portion.

Claim 43 (new):

A method according to claim 42 in which the feed material introduced through the inlet of the swirl generator is an aqueous waste material or an organic solvent based waste material.

Claim 44 (new):

A method according to claim 43 in which the feed material introduced into the inlet of the swirl generator is an aqueous waste material having alcohol.

Claim 45 (new):

A method according to claim 44 in which the alcohol is methanol, ethanol, propanol or the like.

Claim 46 (new):

A method according to claim 42 in which the waste material is a fruit juice syrup containing water residues in which separation of the water from the fruit juice concentrate is required.

Claim 47 (new):

A method according to claim 42 in which one of the components of the waste material undergoes flash vaporisation on emerging from the swirl generator portion to the evaporator portion.

Claim 48 (new):

A method according to claim 47 in which the more volatile of the two components of the waste material undergoes flash vaporisation.

Claim 49 (new):

A method according to claim 47 in which evaporation of the first component is continued in the body of the evaporator.

Claim 50 (new):

A method according to claim 47 in which at least one of the components being separated from the feed stream is subjected to the Ranque-Hilsch vortex tube effect thus causing rapid transfer of heat from one component to another component within the evaporator tube.

Claim 51 (new):

A method according to claim 42 in which the velocity of the components of the feed stream is increased by passage through the swirl generator.

Claim 52 (new):

A method according to claim 42 in which the swirl generator is operated under pressure.

Claim 53 (new):

A method according to claim 52 in which the evaporation apparatus is provided with an evaporation chamber and the evaporation chamber is operated under partial vacuum at least, so that when one or more components emerge from the high pressure zone of the swirl generator to the evaporator chamber, the component undergoes flash vaporisation which further increases the velocity of the component or components.